

Amendments to the Claims

The following listing of claims will replace all prior versions, and listing, of claims in the application:

1. (currently amended) A p[[P]]ointing apparatus for [[the]] correct positioning of [[the]] distal locking screws of an intramedullary nail comprising a hole, the pointing apparatus comprising characterised in that it includes:

[[.]] means for receiving ~~designed to receive~~ one or more images of [[the]] a section portion of the nail to be fixed with the screws, the one or more images showing the hole;

[[.]] means for processing ~~designed to process~~ the one or more images to obtain [[the]] coordinates of the centre of the hole and [[the]] inclination of [[the]] an axis of the hole; and

[[.]] means for positioning ~~designed to position~~ an instrument in correspondence with ~~said~~ the axis, and align the ~~said~~ instrument with the ~~said~~ axis.

2. (currently amended) The p[[P]]ointing apparatus as claimed in claim 1, further comprising characterised in that it includes:

[[.]] a head which includes a reference ~~designed~~ to be viewed by an external viewing apparatus ~~X-ray, fluoroscopic or similar~~ apparatus, and means [[of]] for guiding a surgical instrument;

[[.]] means for moving ~~designed to move~~ said head close to [[the]] an end of the nail containing the hole[[s]], to allow said external viewing apparatus to take ~~simultaneous~~ an image[[s]] of the end of the nail ~~with~~ containing the hole[[s]] and of the reference ~~integral with the terminal;~~

[[.]] means for reading ~~designed to read~~ [[said]] the image and calculate [[the]] position and inclination of [[its]] the axis based on ~~the basis of the shape and dimensions of the hole shown in the~~ image;

[[.]] means for reading ~~designed to read~~ the image ~~of said reference~~ and calculate [[the]] relative position and inclination of [[said]] the reference, and consequently of [[said]] the head, based on ~~the basis of the shape and dimensions of~~ [[said]] the reference [[.]] ; and

[[.]] means for calculating ~~designed to calculate~~ [[the]] position and ~~relative~~ inclination of the axis of the hole ~~in relation to said~~ relative to the reference and to move [[said]] ~~the~~ head ~~so as to bring~~ provide [[said]] ~~the~~ means for guiding the surgical instrument ~~guidance means into axis with said~~ hole, with an inclination same as the ~~same~~ inclination [[as]] of the axis of the hole.

3. (currently amended) The p[[P]]ointing apparatus as claimed in claim 1, further comprising
~~characterised in that it includes:~~

[[.]] a reference system ~~designed to be viewed by an~~ external ~~X-ray, fluoroscopic or other type~~
~~of apparatus;~~

[[.]] a pointing system which contains a housing ~~for a quick release coupling of a terminal~~
~~designed to support surgical instrument guidance means (such as a cannula);~~

[[.]] a terminal, fitted with surgical instrument guidance means, ~~which is the terminal~~
~~designed to receive the pointing system via a quick~~ [[-]] ~~release coupling~~ associated with the housing;

[[.]] means for moving ~~designed to move~~ [[said]] ~~the~~ terminal close to [[the]] an end of the
nail containing the hole[[s]], to allow said external apparatus to take ~~simultaneous~~ an image[[s]] of the
end of the nail ~~with~~ containing the hole[[s]] and of [[the]] a reference integral with the terminal;

[[.]] means for reading ~~designed to read~~ [[said]] ~~the~~ image and calculate [[the]] position and
inclination of [[its]] ~~the~~ axis based ~~on the basis of the~~ shape and dimensions of the hole shown in the
image;

[[.]] means for reading ~~designed to read~~ the image ~~of said reference system~~ and calculate
[[the]] relative position and inclination of [[said]] ~~the~~ reference ~~system,~~ and consequently of [[said]]
~~the~~ terminal, based ~~on the basis of the~~ shape and dimensions of the reference ~~said system;~~ and

[[.]] means for calculating ~~designed to calculate~~ [[the]] position and ~~relative~~ inclination of the
axis of the hole ~~in relation~~ relative to at least one between [[said]] ~~the~~ reference and the ~~and/or~~
pointing system and to move [[said]] ~~the~~ terminal ~~so as to bring said~~ provide the surgical instrument
guidance means with an inclination same as ~~into the axis of said hole, with the same~~ inclination [[as]]
of the axis of the hole.

4. (currently amended) The p[[P]]ointing and/or reference apparatus as claimed in claim 2 [[or 3]], wherein [[said]] the means for reading comprise ~~designed to read the image taken by said external apparatus are constituted by a sensor connected via an interface to [[the]] an output of [[said]] the external X-ray, fluoroscopic or other apparatus.~~

5. (currently amended) The p[[P]]ointing and/or reference apparatus as claimed in claim 2, wherein ~~characterised in that the reference system is integral with the head and is constituted by comprises~~ one or more radiopaque bodies of known shape, dimensions and position, incorporated in ~~[[said]] the~~ head.

6. (currently amended) The p[[P]]ointing and/or reference apparatus as claimed in claim 3, wherein the reference system is separate from the terminal and [[said]] the terminal is ~~designed to be connected~~ connectable to the reference system via a quick ~~[[-]]~~ release coupling and is fitted with means for guiding ~~designed to guide~~ a surgical instrument ~~(such as a cannula), in a known position in relation relative to at least one between the reference system and the~~ and/or pointing system.

7. (currently amended) The p[[P]]ointing apparatus as claimed in claim 2 ~~one or more of the preceding claims, characterised in that wherein the reference comprises is constituted by a plurality of radiopaque elements of known shape, dimensions and position.~~

8. (currently amended) The p[[P]]ointing apparatus as claimed in claim 7 ~~one or more of the preceding claims, characterised in that said wherein the radiopaque elements are spheres with a known shape, dimensions and position.~~

9. (currently amended) The p[[P]]ointing apparatus as claimed in claim 7 ~~one or more of the preceding claims, characterised in that said wherein the radiopaque elements or spheres are located at [[the]] vertices of polygons of known dimensions.~~

10. (currently amended) The p[[P]]ointing apparatus as claimed in claim 3 ~~any of the preceding claims, characterised in that~~ wherein the head or terminal and the reference system are mounted on a support comprising a plurality of numerically controlled actuators designed to control translation ~~their movements of the terminal and the reference system~~ according to at least two linear directions orthogonal to one another, and to control their rotation of the terminal and the reference system around at least two non-parallel axes.

11. (currently amended) The p[[P]]ointing apparatus as claimed in claim 2 ~~any of the preceding claims, characterised in that it includes~~ further comprising a sterile hood, fitted to [[said]] the head or terminal, which is the sterile hood designed to cover [[the]] supports and any other parts ~~which come coming~~ into contact with [[the]] an operating field of the pointing apparatus.

12. (currently amended) A p[[P]]ointing apparatus for [[the]] correct positioning of [[the]] distal locking screws of an intramedullary nail, the pointing apparatus comprising ~~characterised in that it includes:~~

[[.]] a support ~~which can~~ able to be positioned proximally in proximity to an operating table;

[[.]] a first ~~movement~~ moving system, mounted on [[said]] the support, ~~which is~~ subject to [[the]] action of numerical control means that control [[its]] movement[[s]] of the first moving system ~~, under numerical control,~~ along a first axis;

[[.]] a second ~~movement~~ moving system, mounted on [[said]] the first ~~movement~~ moving system, ~~which is~~ subject to [[the]] action of numerical control means that control [[its]] movement[[s]] of the second moving system ~~, under numerical control,~~ along a second axis;

[[.]] a reference and/or pointing system made of radiopaque material ~~wherein the~~ comprising spheres [[are]] ~~arranged in such a way that they are not to be~~ superimposed with ~~the intramedullary nail in the X-ray, fluoroscopic or other images~~ taken by an external apparatus associated with the pointing apparatus, thus facilitating correct framing of the spheres and [[the]] target holes in the intramedullary nail;

[[.]] means provided with a quick [[-]] release coupling system for fitting to the reference and/or pointing system [[10a]] and suitably shaped to allow [[the]] fitting of a surgical instrument guide cannula 13;

[[.]] means designed to receive [[in]] an input ~~an X-ray, fluoroscopic or other~~ image file from the external apparatus wherein [[the]] images of [[the]] an end of the nail with [[the]] a hole[[s]] for the distal locking screws and [[said]] the reference are taken simultaneously;

[[.]] processing means ~~designed~~ to process [[said]] the images of the end of the nail with the hole and of the reference and consequently calculate [[the]] coordinates and inclination of [[the]] an axis of the hole ~~in relation~~ relative to [[said]] the reference, and to automatically calculate [[the]] a length of [[the]] a screw;

[[.]] activation means ~~designed~~ to activate ~~the~~ actuators of the first moving system and second moving system ~~slides in embodiment 1 or the upright and arm in embodiment 2 and the actuators of said supports, to move the~~ align the surgical instrument guide ~~on the terminal into axis with the hole in the nail.~~

13. (new) The pointing apparatus as claimed in claim 3, wherein the external apparatus is chosen from a group consisting of an X-ray apparatus and a fluoroscopic apparatus.

14. (new) The pointing apparatus as claimed in claim 3, wherein the surgical instrument guidance means comprise a cannula.

15. (new) The pointing apparatus as claimed in claim 3, wherein the means for reading comprise a sensor connected via an interface to an output of the external apparatus.

16. (new) The pointing apparatus as claimed in claim 3, wherein the means for guiding a surgical instrument comprise a cannula.

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17. (new) The pointing apparatus of claim 12, wherein the external apparatus is chosen from a group consisting of an X-ray apparatus and a fluoroscopic apparatus.